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Effects of the corporate environment on executive decision making and stress

Battmann, W.

Publication date:
1993

Document Version
Publisher's PDF, also known as Version of record

Link to publication in Tilburg University Research Portal

Citation for published version (APA):
Battmann, W. (1993). *Effects of the corporate environment on executive decision making and stress*. (WORC Paper). WORC, Work and Organization Research Centre.

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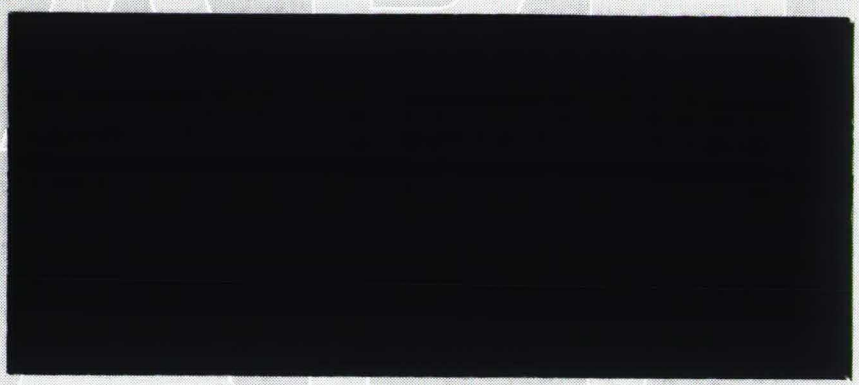

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Effects of the Corporate Environment on Executive Decision Making and Stress

Wolfgang Battmann

WORC PAPER 93.12.020

Paper presented at the
Workshop on Stress in New Occupations
Tilburg, WORC, December 1-3, 1993

December 1993

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ACKNOWLEDGMENT

This paper was written for the WORC Workshop on Stress in New Occupations, Tilburg, December 1-3, 1993

Effects of the corporate environment on executive decision making and stress

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Stress is mostly conceived of as an individual phenomenon or state. However, the term can also be applied to organisations, which as a whole have to cope with the stressors of the corporate environment (e.g. market conditions, competitors, juridical constraints). The "stressfulness" of corporate environments should strongly influence the higher and top level executives being responsible for the corporates' operational success. Specifically, it can be expected that executives in stressful environments abandon long-term strategies, engage in an often inconsequent crisis management, and, in addition, become personally worried and stressed. These hypotheses were tested in a series of field and simulative (business game) laboratory studies. Results help to understand the relationship between the executives personal and organisational crisis management.

From its very beginning two principles seem to dominate stress research, the principles of individuality and of proximity. Individuality refers to the fact, that stress is most often used to describe the impact of adverse internal or environmental conditions on *individual* organisms as well as their *individual* way of coping with the consequences. In human stress research and work psychology individuality became even more pronounced when research began to focus on the *subjective* appraisal and stress experience. Proximity refers to the tendency to look for causes of stress in the work itself and the immediate work environment. On this background it is not astonishing that the vast majority of organisational stress prevention programs as recently reviewed by Ivancevich, Matteson, Freedman & Philips (1990) are individual and proximate also. Relaxation techniques and self-management programs are much more prominent (and most likely cheaper) than changes at the core of the problem, the structure of work and organisation.

The concept of stress, however, is not restricted to individuals. Stress is a system state. As such, the concept can and has been transferred to higher levels of analysis with bigger units like groups (e.g. Janis, 1972) organisations (Katz & Kahn, 1978), or nations (e.g. Lynn & Hampson, 1977). Of course, organisational development and national crisis management are only analogies to individual coping and, in addition, human and organisational resources differ in their nature. But both are limited, both need restitution and both may meet demands they can not tax. Therefore, it is only consequent that the factors identified in human stress research like interruptions, unpredictable constraints or overload of capacity also are stressors with regard to organisations. Certainly "people make the place" (Schneider, 1987) at the workplace in an organisation. But how they can make it depends on constraints and possibilities formed at higher levels. From this perspective, stress at the workplace reflects stress of the organisations which in turn reflects stress in the societies they serve (e.g. the markets).

Though, stress is not just transferred down the line. Organisations interact with their environment, and, in consequence, stress can be buffered and transformed. The present paper focuses on this transformation between organisation and environment. Organisational coping by countering threats, increasing efficiency and opening new possibilities is in industrial

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organisations the classical task of the management. Managers form the major part of the organisation-society interface.

On the background of a system stress approach, managers act as agents trying to fit the structure of the organisation to the constraints and possibilities of the markets, the "externals" in economical terms. They do so by developing and implementing organisational strategies they think fit to cope successfully. The externals are only one of many factors (e.g. internals like organisational resources, diversification, staffing) influencing corporate performance. However, a stressful corporate environment characterised by e.g. by unreliable base-data (due to fluctuating market conditions), high operational complexity (fast product cycles, complicated products) and legislative constraints can be believed to have a strong impact on the corporate policy of management's (see Daft, 1983 for an overview). The design of adequate coping strategies can be seen from an economical and psychological perspective.

From the economical perspective stressful environments should impair managerial performance since organisational planing processes become more complicated and the allocation of internal resources becomes more difficult (Mescon, Albert & Khedouri, 1985). The first topic addressed in the present paper relates to the form and regularity of the coping strategy. Neither economical nor psychological theory offers a clear prediction. Following problem solving research, it could be expected that since long term strategies are not supported by a stressful environment, they are be replaced by short term 'opportunistic' strategies (e.g. Hayes-Roth & Hayes-Roth, 1979). However, it has been also repeatedly demonstrated that people (e.g. Luchins,& Luchins, 1959) and organisations (Daft, 1983) stick to strategies that proved successful in the past even when they are now obsolete. Therefore, in a first study we tried to develop a model of corporate performance modelling the dependency between short and long-term policies.

From a psychological perspective, a stressful environment can also be regarded as a personal stressor for the managers. Managing is their job. Threats to and reductions of corporate performance could be perceived as a personal threat also. Therefore, as the second topic we tried to investigate whether the externals can also predict personal well-being of the management and if factors covariate.

To sum up, two thesis were investigated:

1. Stressful environments characterised by unreliable base-data, high operational complexity and unclear goals reduce the efficiency of management in operational and economical terms. In particular it was expected that in stressful environments, the management's performance in terms of corporate efficiency (i.e. plan keeping, capital growth) is lower.
2. Stressful environments induce stress in the managers having to cope with them.

Study 1: Corporate environment and stress in a German car part plant

The field study was conducted, first, to determine the relative importance of the corporate environment on productivity and well-being of the upper level executives compared to person related factors (i.e. participation in goal setting and operational independence) and, second, to test whether factors impairing corporate performance also increase personal stress levels.

Method

Subjects

The sample consisted of 24 male managers ranging in age from 35 to 58 years[2] working at a Bavarian plant of a major multinational corporation. The plant produces and markets car parts and supply articles and employs a workforce of about 1.000 men and women. The sample represents the upper management of the plant nearly complete since only managers and their deputies from the upper two management levels making up a total of 29 positions were asked to participate. Only three managers could not be included. Participation was voluntary but encouraged by the chief executive of the mother company. By the very nature of this sample, work areas of the managers differ considerably and include staff and line positions.

Procedure

Subjects filled in a comprehensive questionnaire consisting of two parts. In the first part, subjects were asked to describe in detail their area of responsibility especially with regard to planning activities, intra- and extraorganizational influences on work success and the availability and efficiency of means to cope with them. In the second part, individual well-being was assessed by the German version of the State-Trait-Anxiety Inventory (Laux. Glanzmann, Schaffner & Spielberger, 1981). The STAI is a good indicator of negative affectivity (Watson & Clark, 1984; Watson & Tellegen, 1985). In addition, the questionnaire contains several questions regarding stress-experience, time pressure, and perceived workload (see the result section for more details).

The questionnaire was filled in by all subjects in a session preceding a staff meeting.

Results

Company performance

The first part of the questionnaire was designed to assess the corporate performance by the management. Since performance can not be assessed in economical terms in all departments (e.g. personnel) it was operationally defined in a project analytical way as the ability to reach the annual goals given to each manager. Consequently, the first group of questions assessed the environmental and organisational background as well as the managers participation in goal setting and his operational independence (i.e. his "degrees of freedom" to modify plans without consultation). Specifically, five dimensions were assessed either by ratings (i.e. clearness of goals) or quasi-objective data (i.e. number of departments and external institutions a manager has to deal with):

1. **Clearness of goals**. Indicates if the operational goals of the person are clear and concise.
2. **Reliability of base-data**. Indicates if the data on which operational plans base are reliable. Such base-data comprise e.g. marketing figures, personal fluctuation.
3. **Operational complexity**. The absolute number of departments or external institutions/corporations the person has to co-ordinate to be successful.

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[2]Due to the small sample some questions could not be asked to ensure the subjects of their anonymity (i.e. age, years in the company).

4. **Participation in goal setting**. Indicates if a manager primarily works after self-developed plans or under imposed plans.
5. **Operational independence.** Indicates the level of authority and granted permission to adjust plans without further consultation.

The performance projected on this background of strategic planning is, of course, only a theory which like a scientific theory will require many modifications and revisions when it faces the reality of a years work. Three kinds of revisions characterising short-term acting were distinguished:
Revision of goals. Indicates how often goals are redefined in a year.
Revision of means. Indicates how often significant changes in personal, machinery or money allocation were necessary to keep within planned limits.
Revision of time period. Indicates how often planed periods have been overstepped or had to be prolonged.

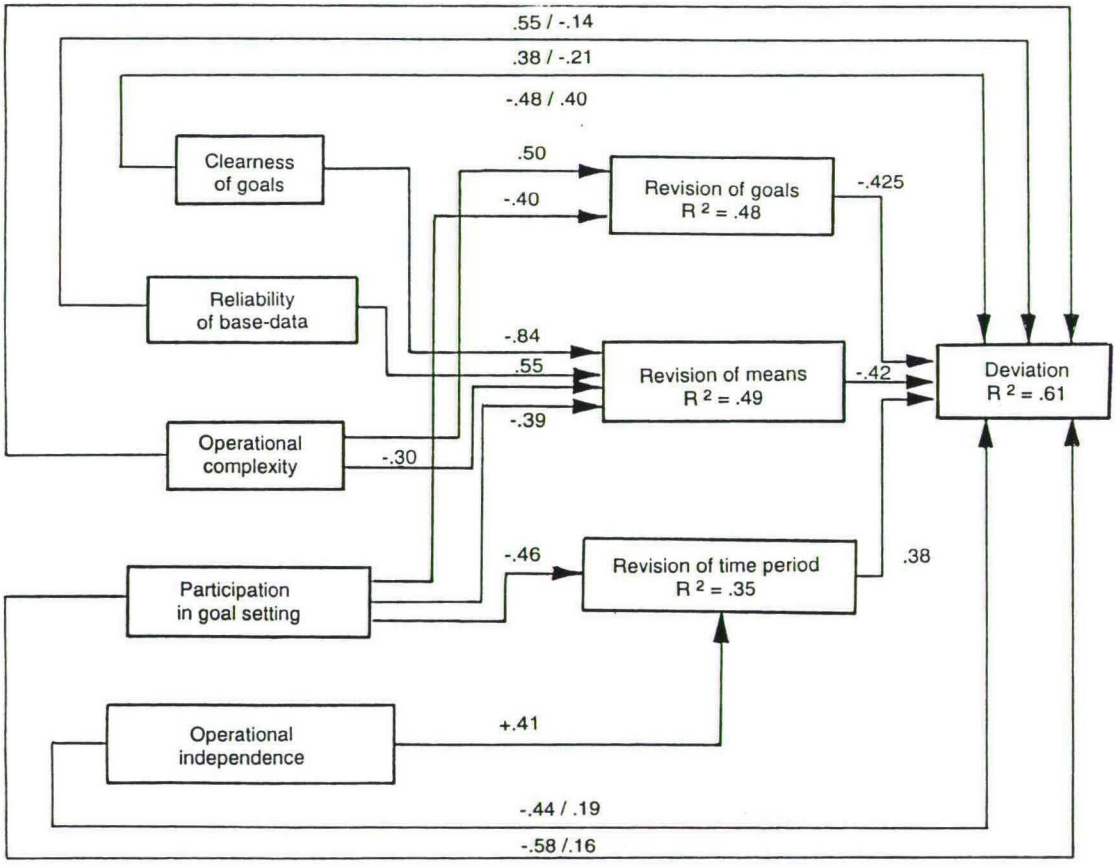

Fig. 1: A path model describing deviations from planned performance as a function of environmental factors, personal resources and revision behaviour.

From these assessments and objective data of the questionnaire a model of corporate performance was developed (see Fig. 1). It was analysed by a path analysis. Therefore, in the figure not only the correlations as the direct but also the indirect path coefficients are depicted (direct/indirect). Significance boundaries for correlations are r=+-.51 for p<.01 and r=+-.40 for p<.05. The causality is on the data-basis of this study, of course, not of a factual but of a merely constructional nature. The model can be regarded as complete and successful if it is possible to predict the deviation from planned performance. This deviation varied from 2 to

25 percent between the departments. As can bee seen, overall the model explains over 60 percent of the deviation against planned performance.

The upper part of Fig. 1 consists of variables characterising the organisational environment. The variables are confounded and can be no pure measures since e.g. organisational goal setting already reflects the externals of the organisation. This fact is demonstrated by the intercorrelation of the variables not depicted in Fig. 1. Clearness of goals correlates with low operational complexity (r=.55) and reliable base-data (r=.28). In addition, reliability of the base rate and complexity are weakly negatively correlated (r=-.18).

Many coefficients linking environmental and personal background and plan deviations confirm well-known facts. Deviations from planned performance are stronger if operational complexity is high (r=.55) and goals are not clear (r=-.48). In contrast, participation in goal setting (r=-.58) and operational freedom (r=-.44) reduce deviations. With regard to the second block, revisions of goals (r=-.43) and means (r=-.42) help to prevent deviations. These revisions characterising short term strategy shifts are negatively correlated with deviations. Obviously, short term revisions of goals (r=-.43) and means (r=-.42) help to maintain overall plans. In contrast, however, revisions of time period are positively correlated with deviations (r=.38), indicating that in many cases time revisions already express a deviation.

However, the significant differences between direct and indirect effects show that the overall relation is much more complicated. This is most evident for the influence of clear goals. While they reduce deviations directly on the one hand (r=-.48), they also strongly discourage revisions of means (r=-.84) on the other and thereby contribute to deviations. Comparably, complexity adds directly to deviation but also encourages revisions of goals (r=.50) which can prevent deviations.

A similar effect can be found for both variables indicating personal resources. Participation in goal setting reduces the readiness to revise and modify plans in general and operational independence relates positively only to time period revisions which already indicate a deviation.

Individual well being

Since it was expected that the variables describing corporate performance also contribute to individual well-being, the dependent variable deviation in the model was replaced by the trait anxiety as an indicator of negative affectivity (see Fig. 2). As can be seen, the model explains 58 % percent of the variance found for anxiety.

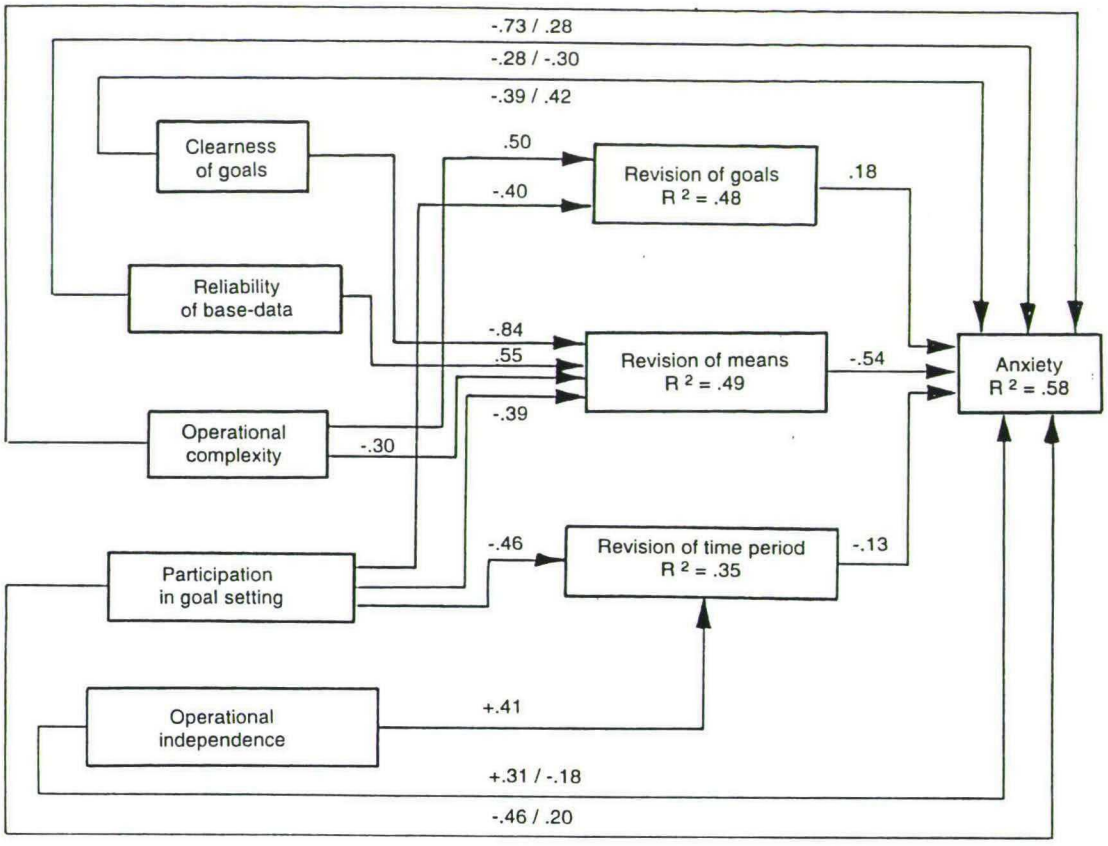

Fig. 2: A path model describing anxiety as a function of environmental factors, personal resources and revision behaviour.

Overall there is a partial correspondence in direction and impact between the factors influencing deviations and anxiety. Clear goals (r=-.39) and reliable base data (r=-.28) as variables of the organisational interface and participation in goal setting (r=-.46) reduce anxiety. In addition, adequate revision of means has a anxiety diminishing effect (r=-.54). However, there are two notable exeptions. First, operational independence adds to anxiety (r=.31). Second, operational complexity, the best single predictor of both deviations and anxiety, reduces anxiety (r=-.73).

Again, the often reversed indirect effects reveal that the direct effects are sometimes more than compensated in the course of action. Indirectly, clear goals (r=.42) and participation in goal setting (r=.20) enforce anxiety due to their negative impact on necessary revisions. Only reliable base-data influence anxiety in a positive way both directly (r=-.28) and indirectly (r=-.30).

Discussion

In general, the results of this study show that variables fom the corporate environment have not only a strong impact on the companies operational success but also on the affective state of its management. Taking only the direct effects into account, there seems to be a co-determination. Factors making work more complicated and thereby adding to deviations also lead to increased anxiety.

There are two exeptions from this rule. An explanation of the first one, operational independence, can be that operational independence in this study was connected mostly to situations which already are an emergency since plan periods had to be revised. Reliance on operational independence was therefore an indicator that something important already went wrong and could not be prevented. On this background, an anxiety reducing effect can not be expected.

The second exeption is operational complexity, which enhances deviations but unexpectedly reduces anxiety. The path coefficients between operational complexity and revisions can help to understand this discrepancy. As can be seen, operational complexity has differential effects on revision behaviour. Complexity makes it more difficult to revise means (r=-.39) since many departments and external institutions are involved. In fact, in many cases these departments and institutions will be or provide the means. Therefore, if means cannot be controlled, revisions necessarily have to made with regard to the goals (r=.50). However, in psychological terms, the manager can not be held responsible and, in consequence, problems due to high operational complexity will be attributed externally by the manger himself , his superiors and the public . In consequence, operational complexity enables the manager to attribute failures externally and thereby to reduce anxiety. These attributions must not but can be self-serving (see Staw, McKechnie & Puffer, 1983)

Furthermore, the data demonstrate that direct effects do not tell the whole story and can be more than compensated by side-effects which are often neglected in stress research (see Schönpflug & Battmann, 1988). From the perspective of the psychology of action a situation with clear goals set in a participative manner together with the provision of efficient means may be labelled an ideal base for success. However, such a situation is also not without danger for two psychological reasons. First, data and goals are only rarely as clear as they seem to be. In fact, as can be seen from Fig. 1 seemingly reliable base-data lead to more deviations and more revisions of means. Second, participation in goal setting generally discourages revisions. The clear situation is, therefore, often underestimated in its demands and has to be coped with by managers who are unwilling to revise plans to which they are strongly committed. Thus long-term goals constrain short term actions and (maybe necessary) revisions strongly. This effect is part of the group-think phenomenon described by Janis (1972) and may be one reason why big managed corporations have sometimes strong difficulties to adapt to changed markets.

A laboratory study on the effects of corporate environment on performance and stress[3]

The field study was molar and did by its very nature not allow a detailed analysis of the managerial decision process and shifts in business strategies. In addition, the effects of the corporates environment were inferred only indirectly and could not be systematically varied. Therefore, a laboratory simulation was developed in which classical management strategies (e.g. product diversification, capital investment vs. build-up of reserves, risk taking, price marketing) could be identified.

The theoretical focus was on two issues. First, following the field study, we wanted to test the effect of two central environmental factors, the clearness of goals and operational complexity

[3]The study was conducted together with Lars Wegner. The game can be obtained for scientific purposes free of charge from us. Only part of the results is published here, see Battmann & Wegner (in prep.) for details.

on company policy. Specifically we expected that subjects managing in an environment with high operational complexity would reflect the threats of the situation in their management behaviour by acting more conservatively (i.e. build up stronger financial reserves, concentrate on low-risk products). Second, we tried to replicate the finding from the filed that show a lower emotional load than subjects in a condition with low operational complexity.

Method

Subjects

Subjects were 43 male and female students from the School of Economics (n= 23), the Department of Psychology (n= 7) and other Departments (n=11) of the Free University of Berlin. They ranged in age from 21 to 36 years (mean=25,5). The economics students participated out of interest after a call for volunteers in several classes, the psychology students participated in part to fulfil study requirements.

Procedure

Material

In a computer simulated game ("Islands in the sun") subjects had to fill in the position of a merchant trading four products (i.e. rice, bananas, mangoes and rum) between two Caribbean islands. Subjects bought the products on one island, shipped them to the other and sold them there to a local dealer. Subjects had to buy at fixed prices, but were free with regard to product mix and capital investment. Reaching the other island subjects could bargain with the (computerised) dealer in the selling process by offering repeatedly to different prices until the dealer agreed. Risk and profit were systematically varied over the four products. After selling the products they brought along, subjects could buy again and then return to the other island. In addition, subjects could deposit money on a bank (5% interest) or ask for a loan (10% interest). Furthermore, subjects could hire a pearl diver who sometimes (20 % randomised success rate with a 3 to 1 return rate) found valuable pearls and mostly not. Finally, subjects were three times asked for a loan by another dealer. The amount asked for was standardised to 30 percent of the current cash of the subject. Subject travelled twenty times between the island, and, therefore, had 40 opportunities to sell and buy and 20 opportunities to use the bank or hire a pearl diver.

Before and after the game several questionnaires about computer literacy, strategies in the game and the subjective state had to be filled in by the subjects. As in the field study, the STAI was used to assess anxiety. The state version was administered twice, directly before and after the game.

Design

A 2 x 2 factorial design with the factors society (competitive vs. social) and environment (low vs. high operational complexity) was realised.

Trading was just a means to obtain a higher goal. All subjects were instructed that the final goal was to become appointed to secretary of commerce of the islands by the king. Subjects of

the *competitive condition* were told that the king would appoint the most successful trader in economic terms. Subjects of the *social condition* were told that the king would appoint a trader who is successful but also takes into account social considerations. Subjects were regularly informed about their standing in the kings favour by a liking scale.

Complexity was varied by the creation of an unstable environment. Subjects in the *unstable environment* had to cope with hazardous rainstorms and thieves. Only once, after the fourth trial, they suffered a real loss of 10 percent of their goods in a rainstorm, but they were 5 times informed that they luckily survived a storm or that thieves were seen by the crew but did not take anything. Subjects of the *stable environment* received no such information nor did they loose goods or capital.

Data were analysed by repeated measures MANOVA. For this purpose, the 40 trading opportunities were aggregated to 4 trials containing 10 trades. Capital dependent performance values for the unstable group were adjusted for the loss at the beginning of the game.

Results

Performance and Strategies

Classical performance indicators are earning and capital growth. In Fig. 3 the mean growth of capital over trials is depicted, differentiated for competitiveness and stability. As can be seen, competitiveness leads to a stronger and instability to a lower growth. Subjects in the stable competitive condition are most successful from the beginning with a growth rate over 20 percent. Subjects in the unstable competitive environment catch up at the second trial, but at no time reach the level of the other competitive subjects. Subjects in the social condition have a steady but low growth rate which again is lower in an unstable environment.

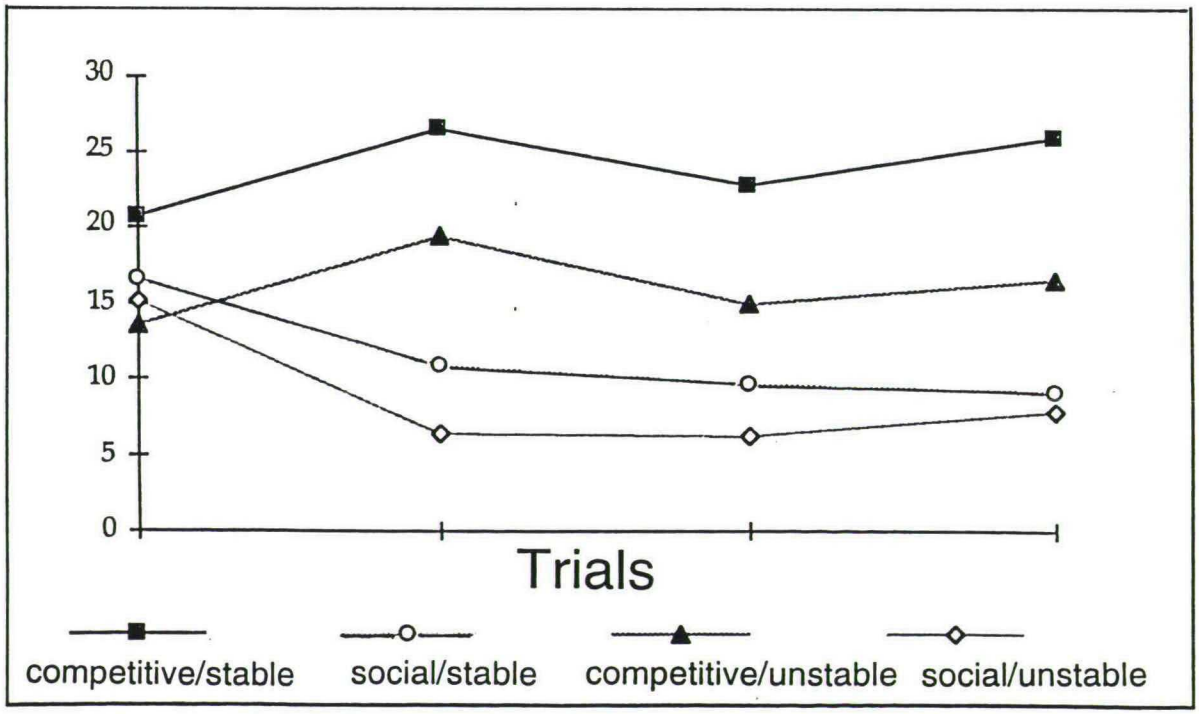

Fig. 3: Mean capital growth over trials differentiated for competitiveness and stability of the environment.

As an integrative indicator of the management strategy, the subjects average financial portfolio is shown in Fig. 4. The portfolio consists of five groups of investments (.i.e. money invested into goods, money saved at the bank, money invested in pearl diving, money lent to another dealer, cash available). As can be seen, investment into goods and savings together accounts under all conditions for more then 85 percent of the capital. However, relations between these two forms of investment differ. In general, subjects in the competitive and in the stable environment invest more in goods and not in savings ($F(1,38)=7.82$, $p<.01$); $F(1,38)=5.4$, $p<.05$). The interaction is not significant, but the effect is most pronounced for the stable competitive group, which saves only 23 percent of the capital.

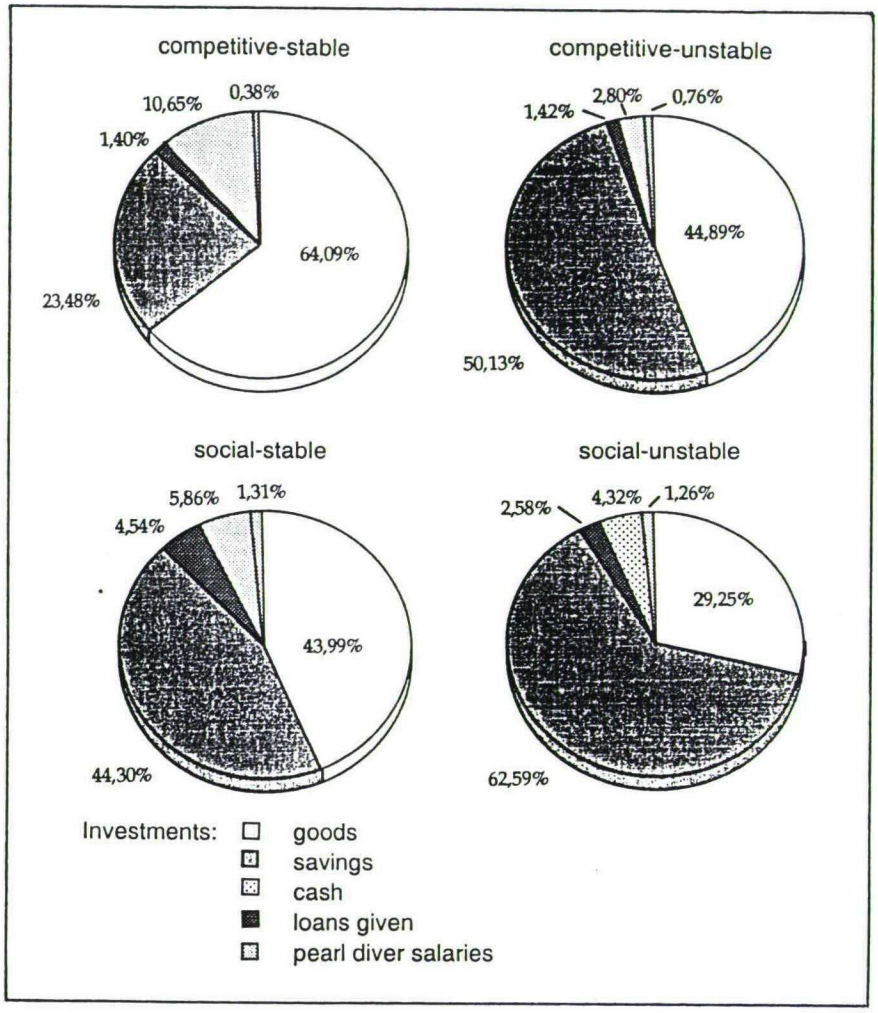

Fig. 4: The average portfolio over trials differentiated for competitiveness and stability of the environment.

Individual well-being

Individual well being was assessed, like in the field study, with the STAI. However, the state scores were used and a change score was calculated by substracting the pre experimental score from the post experimental score (Fig. 4). Due to this procedure positive values indicate an increase, negative a decrease in anxiety. To control base line effects, in the analysis of variance the pre experimental state score was used as a covariate. As can be seen, both factors influenced anxiety. Anxiety decreased for subjects in the social and unstable environment.

The only group with an increase over time was the group in the stable competitive environment. As a very significant effect for the covariate shows ($F=1,38)=18.79$, $p<.001$), there is baseline dependence in this data. However, the effect for competitiveness was significant ($F(1,38)=7.38$, $p<.01$) and the effect for stability ($F(1,38)=2.41$, $p<.13$) remains in the expected direction.

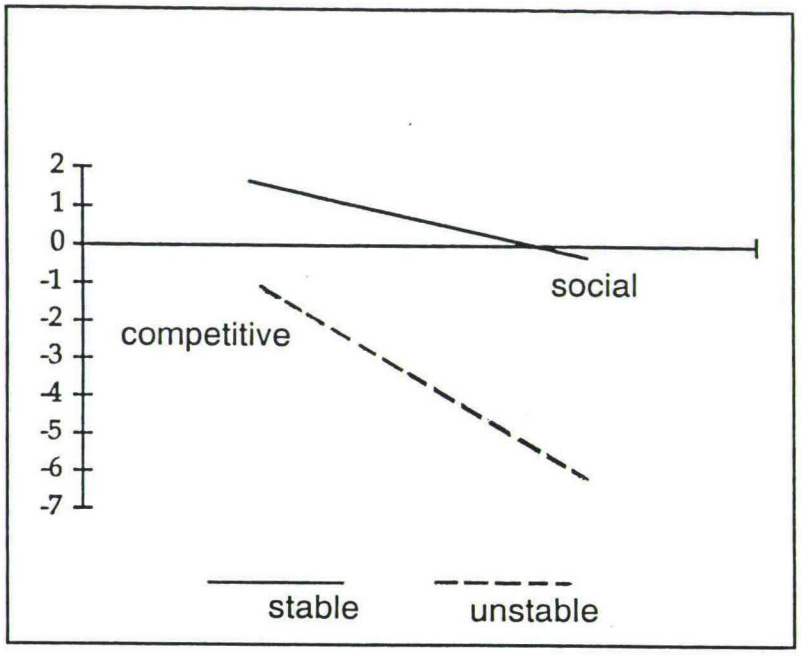

Fig. 5: The change of state anxiety during the experiment (post-state minus pre-state) differentiated for competitiveness and stability of the environment.

Discussion

The laboratory study differs from the field in its population (students) and the seriousness of the situation. It should be noted, however, that the students were highly motivated and liked the game very much. Several subjects played it a second time and/or asked for a copy. Nevertheless, it was a game.

Results confirm that the environment has considerable influence on performance and policy. Performance differences are in part trivial here, because the subjects of the non-competitive group were asked to balance profit against social considerations. However, lack of stability as an unconstrained variable with regard to performance lead as expected to reduced capital growth also. As can be seen from the portfolios, the differences in performance are based on divergent company policies. It should be noted, that the operationalisation of stability was not a very strong one. Subjects in the unstable condition lost only 5% of their capital, a loss that was balanced in most cases with two trades. Nevertheless, lack of stability is not coped with by diversification or limited risk taking but by strongly increased savings. To deposit more then 50 percent of the capital at a 5 % interest rate in a market allowing a 10% growth under worst conditions is, of course, safe but highly inefficient. There are no normative theories of risk management, but a reasonable conservative reserve would be a reserve covering two such losses. Therefore, the instability of the environment is overcompensated by the subjects. They over insure themselves.

With regard to anxiety, like in the field study, operational simplicity and clear goals proved to have a slight negative effect with regard to the affective state. In contrast, anxiety was significantly reduced when goals are unclear and the environment unstable.

General Discussion

The results of both studies converge in indicating that the corporate environment has a strong impact on decision making and management.

With regard to corporate policy and the transformational function of management, results of both studies suggest that transformation primarily means compensation. This is most evident in the laboratory study in which subjects prefer the save but unprofitable heaven of the bank account over the market in order to cope with the dangers of the environment. However, also the results of the field demonstrate the formative function of clear goals especially in combination with participative goal setting. Managers and students obviously tried to stabilise their organisation or business against the dangers in the corporate environment. Such a strategy is, of course, reasonable since organisations need stable structures as a basis of operation. As the results of the field study show, however, to feel on the safe side does not necessarily mean to be on the safe side. The second side of the coin "stability" is "lack of flexibility" and the positive effects of stability are more then outbalanced by its negative effects. Therefore, the studies prove that its only a short step from a reasonable compensation to a dangerous overcompensation. In the field, the goals set to cope for instability inhibited the readiness to respond on a short time basis. In the laboratory study, subjects stabilised their business by withdrawing from the market and running a bank account. Both strategies may satisfy the "safety needs" of an organisation on the short run. On the long run they are, however, not productive especially if, as discussed above, goals reflect plans and fears which don't fit a changed reality.

In addition, both studies converge in the unexpected finding, that what is bad for the company in operational terms can be good for its management in emotional terms. A stressful corporate environment serves as a buffer for executives with regard to the outcome of their decisions and planning. May it be realistic or just self-serving, it is relieving to explain failure to relevant others or oneself as caused by externals. A self-serving bias may not fit well in our picture of a realistic "down to earth" manager. But the finding is supported by those of other authors (Pfeffer, 1981; Staw et al, 1983) and reflects the fact that performance and career are not strongly linked when a higher level has already been reached. At least in Germany (where the study was conducted) it is the exeption that executives have to fear negative personal consequences (e.g. being replaced) if the corporation is not successful. In contrast, it is regularly criticised that CEO salaries increase despite poor corporate performance. However, "CEO-bashing" following poor corporate performance ist according to the magazine *Newsweek* also in the United States of America a fairly recent phenomenon despite the "hire and fire" attitude often attributed to its management system.

This interpretation also points to the limits of generalization of this finding, since it can be expected that this effect is less pronounced or even reversed for managers in countries where positions and salaries are strongly linked to performance or for owners of smaller private enterprises.

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